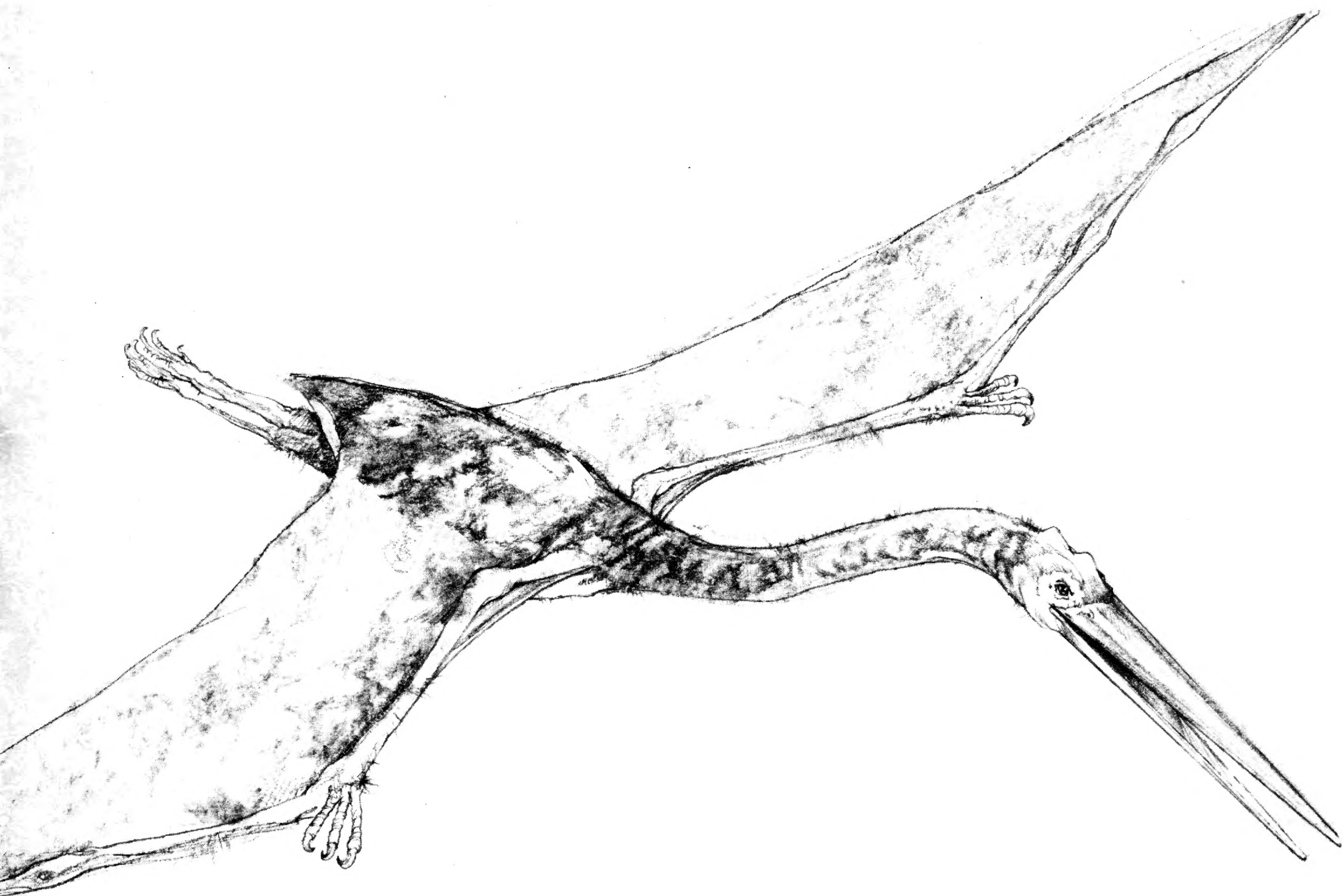


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*1986-1987 Annual Report*

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# CALIFORNIA ACADEMY OF SCIENCES



# CALIFORNIA ACADEMY OF SCIENCES

Golden Gate Park, San Francisco, California 94118

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## MESSAGE FROM THE CHAIRMAN

AT THE END of two years of my term as Chairman of the Board of Trustees, I find myself continually amazed to find new ways in which the Academy serves our community. With approximately 1.5 million visitors each year, our charge is to keep our museum and public facilities current as we display and interpret science for the public. At the same time, we must maintain our many research activities which support what you see on the exhibit floor. Collections of international importance, housed in the Academy, must be cared for and maintained, studied and sent to the four corners of the world to aid in the research of other scientists. Through our active Education Department, supporters of the Academy create opportunities for a broad audience of adults and children to be exposed to the natural sciences.

I am pleased to announce that Phase One of the Academy's Capital Campaign, "The Academy for the Nineties," is now fully funded. With projected costs of \$12.8 million, we have succeeded in raising over \$15 million.

The Capital Campaign Committee, which included Peter McBean, Rudy Peterson, Jerry Hume, Gene Shurtleff, Libby Schilling, and the writer as Chairman, were gratified to discover wide acceptance of the Academy and its educational goals among the Capital Campaign's many donors.

Rosemary and Bill Hewlett's substantial gift got the campaign off to a tremendously encouraging start. Funding from the State of California, with the help of Speaker of the House Willie Brown, Assemblyman William Filante, Senator Milton Marks, and Senator Alfred Alquist, has been of great benefit to the Academy. Many other generous donors have made substantial and greatly appreciated gifts toward the completion of Wild California hall, which will open next fall.

As for the immediate future, we are eager to continue to implement the many improvements provided for in Phase I. While we will maintain the size and basic shape of the Academy's building, our goal is to make better use of the museum's existing space. We believe you will be very pleased with the results. In the coming year, our major efforts will be directed towards completing the Wild California exhibit, and obtaining from the City of San Francisco's many agencies the necessary approvals for construction in Golden Gate Park.

In fact we are pausing to reflect on the kindness and generosity of our friends, and to review our course. While we deploy the funds from the Capital Campaign, our major fundraising emphasis will be on annual giving, raising monies for current operations.

The beginning of 1987 also marked the debut of our own Academy Store. The Store is doing fine work in complementing Academy exhibits and programs and also earning income for the museum's operating budget.

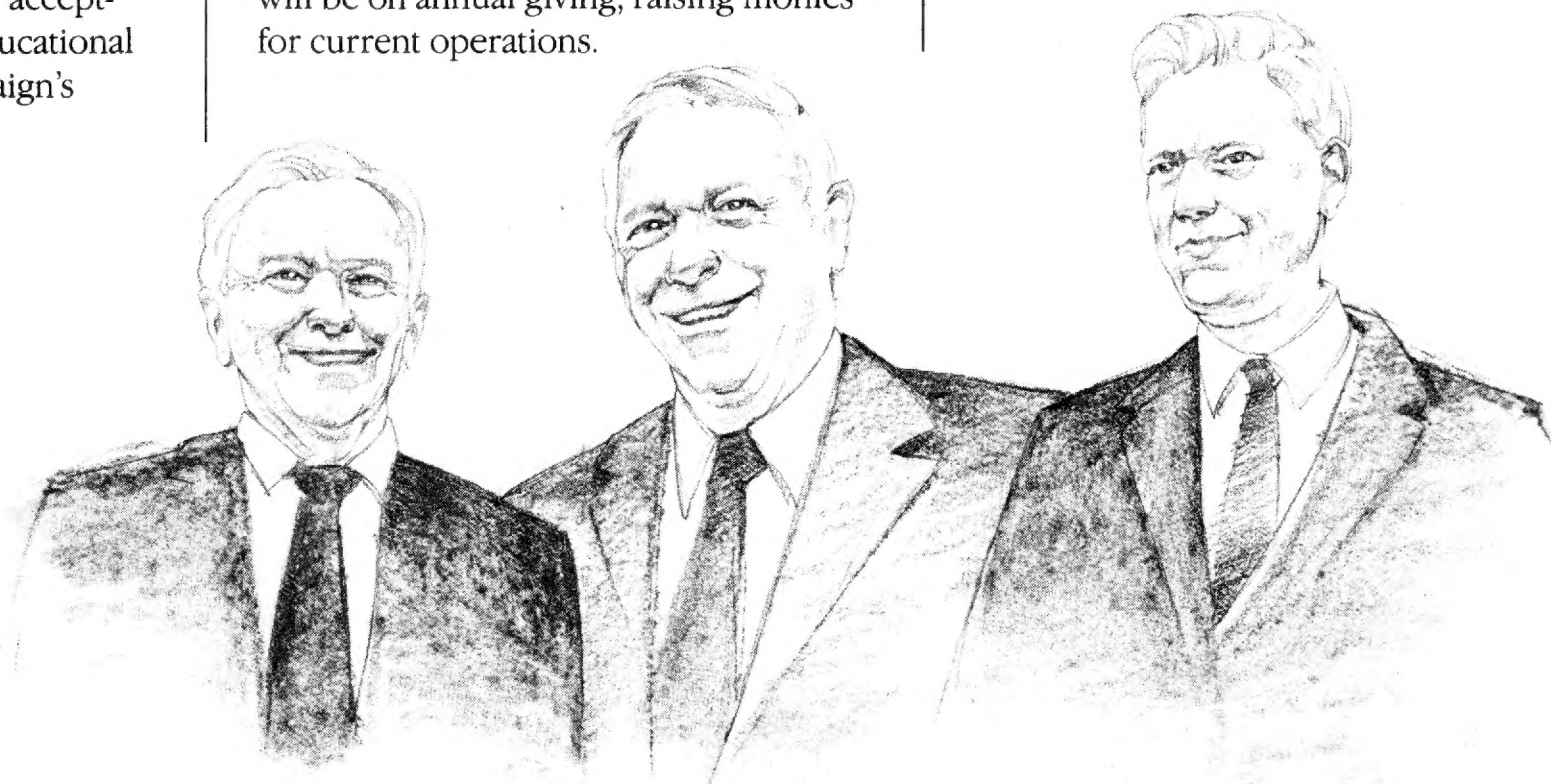
A series of excellent and very popular temporary exhibits entertained and educated Academy visitors during the year. *Pacific Discovery's* "Here at the Academy" column (in this issue) reviews them in detail.

In many ways, the Academy touches a tremendous number of individuals — San Franciscans and visitors to San Francisco and the Bay Area as well as many members of the international scientific community. This is a great institution and I am honored to be associated with it, and to have had the opportunity to be part of planning for its future and the implementation of some of those plans.

Thanks for your support. It is much appreciated by trustees and staff.

—JEFFERY W. MEYER  
*Chairman, Board of Trustees*

*Trustees Gene Shurtleff,  
Jeff Meyer, and Jerry Hume.*





## THIS YEAR AT THE ACADEMY

# *Planetarium*

SINCE ITS OPENING in November of 1952, the Morrison Planetarium has been dedicated to the tasks of opening the public's eyes to the wonders of the universe and serving as an information center for astronomy and space science. This has been accomplished primarily through the operation of the domed Theater of the Stars, in which public presentations have been given to an estimated 4.4 million people. In addition, the Planetarium has explored outer space with 1.2 million Bay Area students, to date, in shows specially designed for the elementary school level.

Now in its thirty-fifth year, the Planetarium has for the past several years been undergoing a gradual and continuing process of modernization. The great star projector at the center of the theater, historically important as the first such projector for a major planetarium designed and built entirely in the United States, is currently undergoing a major internal transformation: the renovation of the projector's thirty-two starplates. These are the "transparencies" which produce the images of the stars in the sky, and they constitute the very heart of the Planetarium itself.

The projector's original starplates are unique in the planetarium industry. Ordinary photographic slides of the stars would not last long under the heat generated by the star projector. Therefore, most such instruments use thin sheets of metal through which thousands of tiny holes have been drilled. By contrast, Morrison's starplates were produced by hand-placing 3800 grains of carborundum grit onto the flat surfaces of thirty-two large condenser lenses. This was a painstaking task that took Frances Greeby, then a young optics technician, six months to complete in 1952. The lens surfaces were then coated with a layer of vapor-deposited aluminum, and the

grains were carefully brushed away. The open holes which remained each represent a single star. As light from the projector's 1000-watt lamps shines through the holes and is focused with additional lenses, the resulting image looks like a field of stars. The position and size of each grain placed on the condenser lens was carefully determined and corrected for parallax so that the projected images accurately simulate the actual appearance of the constellations in the real sky. The irregular shape of the carborundum grain creates the illusion of a point rather than the round disc produced by a drilled hole, and this lends greater realism to the star images.

Since the cost of purchasing custom-made starplates from an established planetarium manufacturer was considered prohibitively expensive, Planetarium Chairman Steve Craig decided to follow the "we can do it ourselves" spirit of the star projector's builders. Under the supervision of Planetarium Associates Allan Wilson and Ron Hipschman, work is being co-ordinated with several local organizations, including the Lawrence Livermore Laboratory, to make new starplates by laser-etching the star images onto chromium. The irregular shapes of the star holes will be retained, but the number of stars projected will be increased from 3800 to approximately 6000, better matching the number visible to the unaided eye.

Another recent and important project not as immediately apparent to audiences is the redesign of the star projector's thirty-two internal shutters. These mechanisms, similar in design to the gravity-controlled eyelids on a toy doll, prevent stars from shining below the level of the Planetarium horizon.

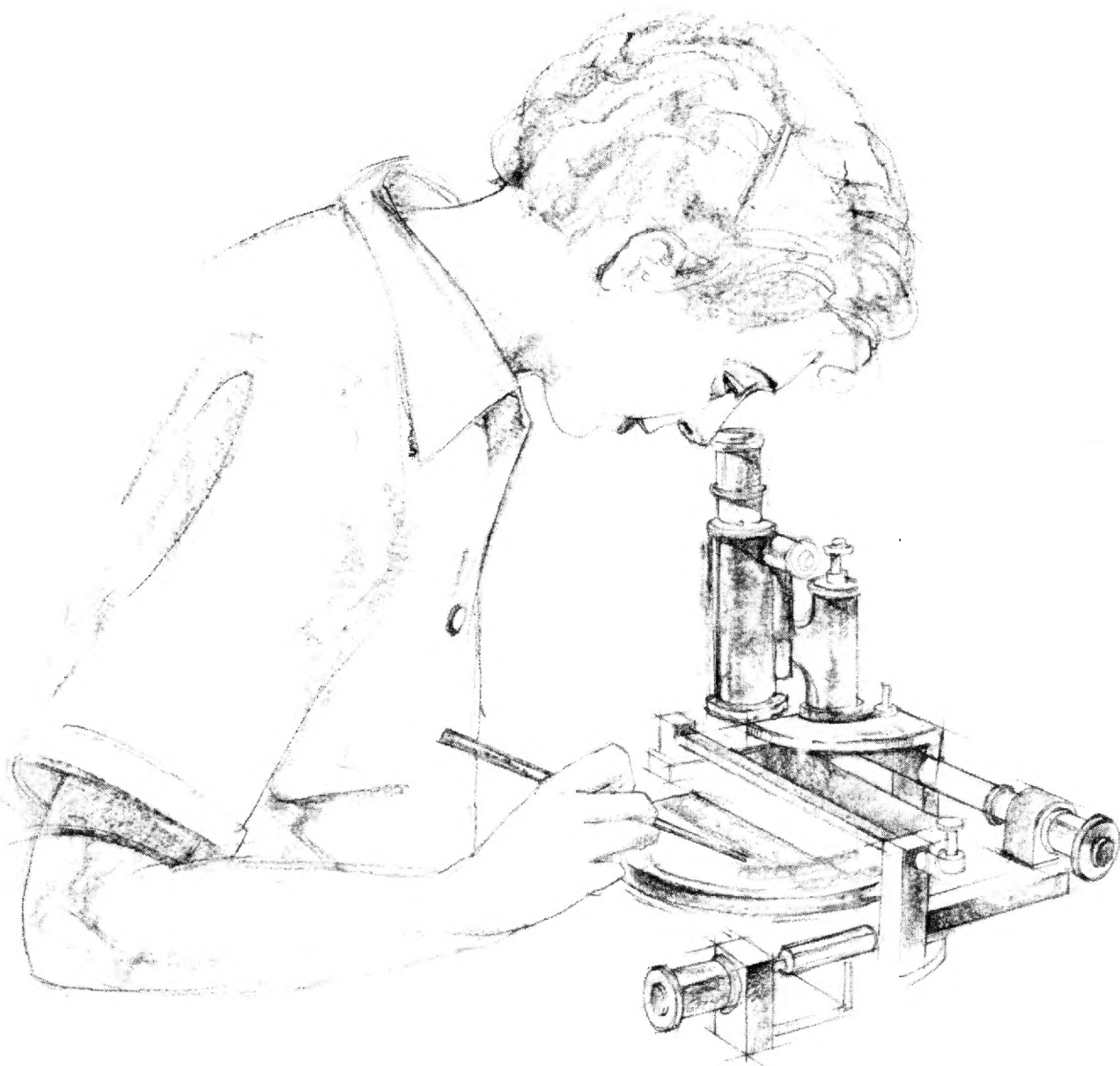
Plans are also well underway to replace the Planetarium's original control console with a computerized automation system. To the surprise of many visitors, Morrison's shows are manually operated.

All visuals are controlled in real-time by the Planetarium lecturer, who often is also narrating the show. Thus, the visual complexity of shows has always been limited by the fact that the lecturer has only two hands. The installation of a modern automation package will enable the programming and delivery of more complex and visually stimulating feature presentations while retaining the predominantly live narration by the Planetarium lecturers. Proceeds from the Academy's 1987 "Starry Night" Ball initiated funding for the automation system.

Other Planetarium systems are also being continually upgraded. The installation of a projection video system was made possible in 1986 by a donation from Trustee Thomas Tilton. This system makes use of an Apple II computer, donated by Apple, to access material from laserdiscs. Chief Planetarium Technician Jeffrey Carl recently undertook a cosmetic redesign of enclosures for the panorama projection system, resulting in quieter, longer-life operation of projectors. Academy electronics technicians Wayne Lunden and Dean Do have also designed and installed custom components which will allow the final installation of speakers to the full-stereo theater sound system begun by Vintage Audio Supply Company of El Cerrito.

The addition of Lonny Baker in the Spring of 1987 as the Planetarium's Education Co-ordinator has enabled the staff to streamline school-level shows, bringing them more closely in line with the California Department of Education's current science curriculum.

In 1986, the generosity of Trustee William J. Hume allowed the construction of a small, flat-roofed observatory at the Academy's Pepperwood Ranch in Sonoma, California. The facility, named



*Frances M. Greeby, Academy optics technician from 1944 to 1952, spent six months placing individual grains of carborundum grit onto condenser lenses to make the Planetarium's original starplates.*

for Mr. Hume, has been equipped with the Planetarium's six-inch Alvan Clark refracting telescope, a ten-inch Tinsley professional reflector, donated by Frank Miller of Santa Rosa, and a seventeen-inch Newtonian reflector, donated by amateur astronomer and comet-discoverer Doug Berger. The observatory is used for skywatching sessions by classes, groups of members, and special guests.

Serving as a community information center on astronomy, the Planetarium fields thousands of inquiries each year from the public on sunrise and sunset times, moon phases, star and planet identification, meteor showers, and other astronomical phenomena. The news media, libraries, law firms, and private industry also often consult the Planetarium for information.

In addition to performing its educational mission, the Planetarium has broadened its programs to include more purely entertaining presentations, such as live music concerts and laser shows. These attract audiences that may not ordinarily visit the Academy, many of whom return for further visits.

In 1967, the Planetarium became one of the first to offer live music concerts under its indoor sky. Twenty years later, a revived and energetic concert series, coordinated by Elaine Thornburgh and featuring classical and ethnic music, has developed a highly regarded reputation and a growing audience. Performances feature many locally and internationally acclaimed artists, including the world-renowned men's chorus, Chanticleer; the

San Francisco Symphony's principal violinist, Daniel Kobialka; and Grammy Award-winning jazz vocalist Bobby McFerrin.

In 1958, "Vortex," the world's first planetarium light show, was featured at Morrison Planetarium. In subsequent years, abstract light-and-sound presentations grew increasingly more sophisticated and popular, following "Vortex"'s pioneering vision. In 1973, lasers were introduced to planetarium light shows world wide, inspiring a whole new form of entertainment. The first such laser show, "Laserium," was brought to Morrison Planetarium in 1974 by Laser Images, Inc. of Van Nuys. "Laserium" shows have featured a broad mixture of music, including rock, classical, jazz, and New Age, as well as striking multicolored laser visuals. The recent introduction of state-of-the-art computer graphics and three-dimensional animation promises to make these shows more spectacular than ever.

The Morrison Planetarium has come a long way since 1952, when shows were called "lectures" and the most exciting effect besides the stars was the lecturer's arrow. The Planetarium shows now incorporate modern audio-visual techniques and video projections, and programming includes world-class live music performances and state-of-the-art laser shows. With these most recent and ongoing renovations, the Morrison Planetarium staff looks enthusiastically toward continuing to offer challenging and stimulating programs for the future.

—BING F. QUOCK  
Assistant Chairman,  
Morrison Planetarium



## THIS YEAR AT THE ACADEMY

# Aquarium

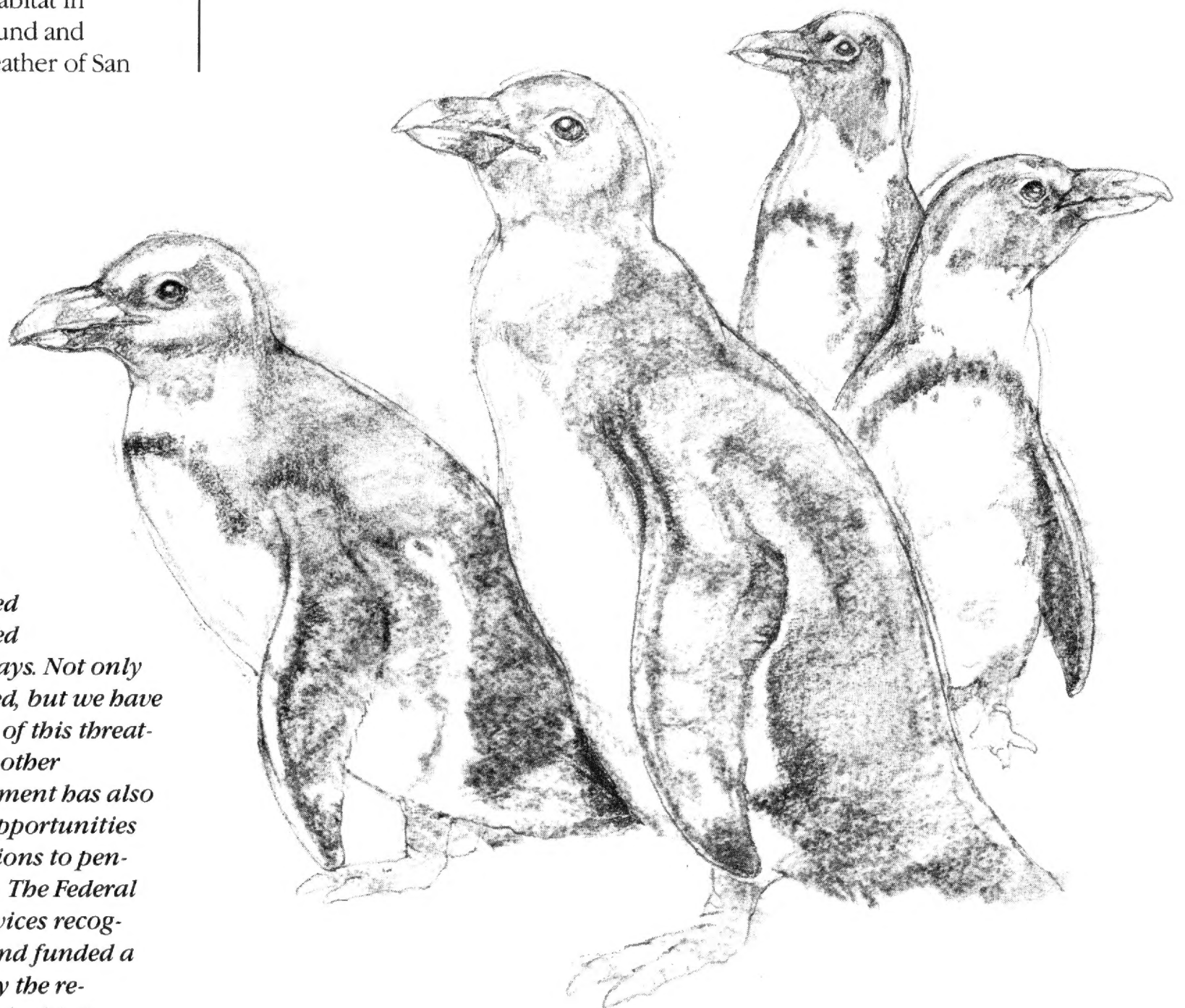
**T**HE ACADEMY IS UNIQUE among the world's great natural history museums in having a large aquarium as part of its display and education component. The gurgling, bubbling, splashing sights and sounds of life in the water are matched only by the ebullience of our terrestrial audience, and that is perhaps the key to the dynamism that the Academy projects.

Since 1923, the Steinhart Aquarium has delighted more than 100 million Academy visitors with its diverse collection of fishes, invertebrates, and algae from far-flung tropical archipelagos, the nearby tidepools of the Farallon Islands, and nearly every imaginable habitat in between. The often fogbound and occasionally inclement weather of San

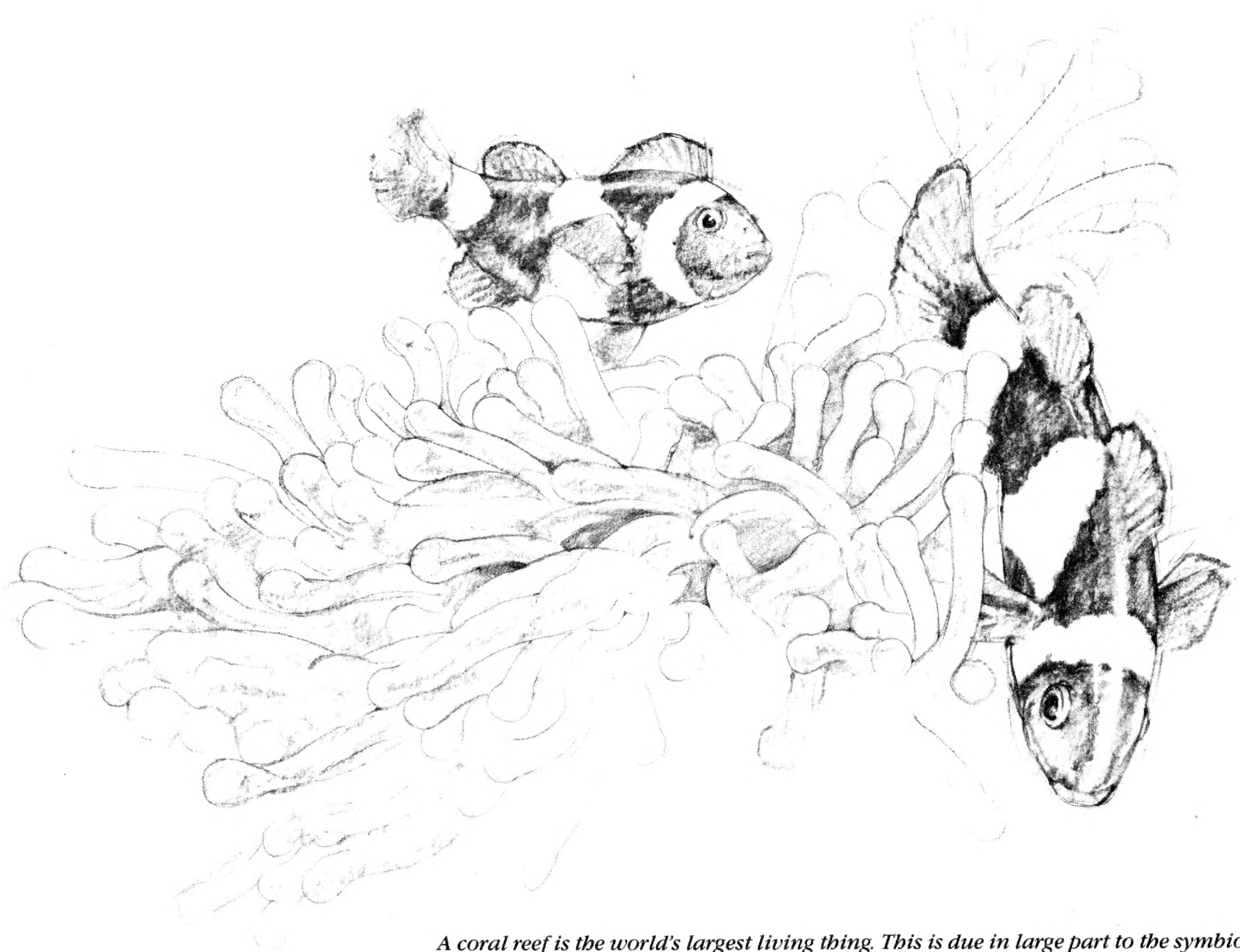
Francisco has made the display of tropical reptiles and amphibians virtually impossible for San Francisco's Zoological Garden, so the Academy is home for these animals as well.

New display techniques and recent technological innovations now allow the husbandry of aquarium animals which biologists previously thought were impossible to maintain. It is in that spirit that the Aquarium is moving ahead with

its Living Coral Reef project. Funded by a generous foundation grant, staff aquarists and engineers began an ambitious program to create an aquarium habitat for a living Pacific coral reef—a feat heretofore impossible due to the toxicity of traditional aquarium displays, the unique regimen that living coral requires, and the difficulty in transporting live specimens from the wild. Using recent



*The Aquarium's Penguin Environment has benefited South African Black-footed Penguins in numerous ways. Not only has our colony reproduced, but we have been able to make chicks of this threatened species available to other institutions. The Environment has also provided our staff with opportunities to make major contributions to penguin husbandry research. The Federal Institute for Museum Services recognized this at year's end, and funded a research program to study the reproductive behavior of these birds.*



*A coral reef is the world's largest living thing. This is due in large part to the symbiotic relationships that, through their synergy, improve the survival success of this "super-organism." The symbiosis of the clownfish and its host anemone is only one of the relationships to be appreciated by visitors to the Aquarium's new coral reef exhibit.*

discoveries by Smithsonian scientists and assisted by the staff of the Waikiki Aquarium, our staff has established a prototype tank that has succeeded beyond our wildest expectations. Demolition of older tanks alongside the Penguin Environment to make way for the construction of the new display is well underway. The Academy's own coral reef should soon be replete with tropical reef sharks, coral reef fishes, and living corals. What has taken Nature eons to evolve and millenia to perfect should be on display in the Aquarium as this report is published.

The Aquarium's diverse and extensive collection of marine and freshwater animals are a source of opportunities for research as well as display. Because the Aquarium's wide variety of aquatic life and water systems that can duplicate environments are unavailable to other research laboratories and universities,

the Academy's Department of Aquatic Biology was created in 1982 to encourage expanded use of the Aquarium's collection by staff and visiting researchers. Work currently underway includes behavioral and physiological studies as well as biochemical studies of fish and invertebrate evolution through the analysis of sera and tissues.

This year, research included: studies of dolphin and seal behaviors associated with object-oriented choice, conducted by Hal Markowitz of San Francisco State University and his graduate students; research by John McCosker and Andrew Bass of Cornell University into the acoustical behavior of the Plainfin Midshipman Fish, the source of the notorious underwater racket in Sausalito; comparative

studies of major fish groups by Jerold Lowenstein of Presbyterian Hospital and John McCosker using radioimmunological assay techniques; and several other projects by Aquarium and other Academy staff involving squid reproduction, invertebrate evolution, penguin husbandry, amphibian breeding, and fish diseases.

—JOHN E. MCCOSKER  
*Director,  
Steinbart Aquarium*



## THIS YEAR AT THE ACADEMY

# Education

THE ACADEMY'S ACCLAIMED Education Department continues to offer a wide range of activities to the general public, as well as to members, teachers, and students of all ages. This year was the first for the "Ask Me" Team, a program that trains San Francisco high school youth to provide assistance to Academy visitors. Partial funding was provided by the Mayor's Youth Fund. Biology Forum, a seminar series designed to help keep high school science teachers abreast of developments in research science, finished its second year. This three-year program is a collaborative effort of the Education Department and the Fellows of the Academy and is funded by the Walter S. Johnson Foundation. San Francisco elementary teachers participated in a series of workshops on how to use fossils to teach evolution, sponsored by the S. F. Education Fund.

The 34th Annual Bay Area Science Fair exhibited 350 student projects that had already won at the district level. Judging at the Academy produced regional winners and two projects that were sent to the national level competition. The Photography Contest for Young People, now

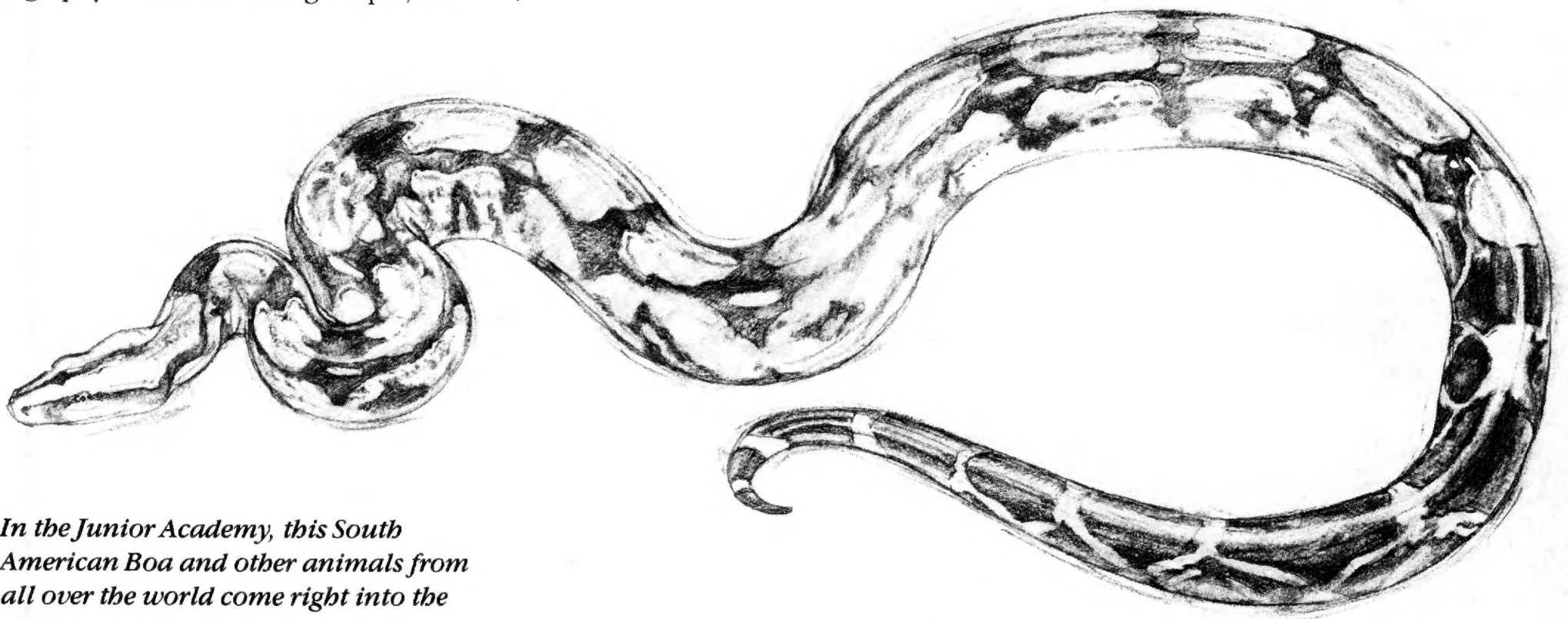
in its fifth year, exhibited eighty award-winning photos for Academy visitors. This contest is co-sponsored by KRON-TV and drew over 1400 entries, making it one of the largest photography contests for young people in the state.

The Office of Volunteer Services recruits, places, and records the activities of the Academy's large and dedicated volunteer work force. Coordinator Diane Butler reports that in the past year 789 people contributed 42,000 hours in support of the Academy's mission. Virtually every department enjoys the assistance of these unpaid staff members. Thanks to the diversity of experience, interest, and expertise of these volunteers, their tasks include penguin feeding; public information and education; plant fabrication and model making; and other technical assistance, to name a few.

The largest group of Academy volunteers serves the Education Department. In 1986-87, under the leadership of Docent Council Chair Sandy Linder, 200 members of the Docent Council conducted tours for over 10,000 students and

visited an additional 8400 students in their Bay Area classrooms through the Supervan program. A second supervan, funded by the Bernard Osher Foundation, has enabled the docents to expand this valuable service. Tours for the public and for new members of the Academy are offered on a regular basis. The fall workshop given by the docents to help teachers use the museum attracted over 200 participants.

In January, the Discovery Room was given a very favorable report by a professional evaluation team, supported by a grant from the San Francisco Foundation. The report confirmed the response of more than 61,000 visitors to the room this year and testified to the great value of the opportunity to experience museum objects without barriers. Like the Tidepool in the Aquarium, this hands-on display area is staffed by volunteers who assist and direct the public. Adults enjoy these areas as much as children do; attendance was almost equal for each group.



*In the Junior Academy, this South American Boa and other animals from all over the world come right into the classroom to excite the interest of young scientists.*





*Junior Academy members have access to a well-supplied science laboratory which brings them closer to the microscopic world around them.*

The Junior Academy program provides young people with the opportunity to explore the world of science through classroom and field activities. This year, 140 classes and field trips covered a broad range of topics in life sciences as well as art, anthropology, and astronomy. Six- to eight-year-old students attend activities with an adult so that it becomes a shared experience for families. Field activities for older students are led by Academy staff and other trained naturalists. Some of these included day trips to Pepperwood Ranch Nature preserve and Año Nuevo State Park. A four-day trip from the coast to Mono Lake, and a week at the Desert Studies Research Center spent collecting and studying the reptiles of the Mojave Desert, were the two longest field trips of the year. The Junior Academy is supervised by Brian Gibeson, who in turn oversees a dedicated staff of young

volunteers who assist with the maintenance of an assortment of live animals including mammals, reptiles, fish, and invertebrates. Our animals are used in classes and hands-on demonstrations in various education programs.

The Adult Education program offered a wide variety of natural history courses and study tours during the past year. Knowledgeable and talented scientists, naturalists, historians, and artists shared their expertise in eighty-five courses and seventy-three study tours. Course topics included Biological Illustration, the Living Coral Reef, Home Saltwater Aquariums, and the Geology of the Bay Area. The study tour participants explored the Lava Beds National Monument, Duxbury Reef, and Pigeon Point Lighthouse. This program of offerings, announced

through the Activities Calendar, continues to be one of the finest continuing education programs seen in museums today. A new brochure format for the calendar allowed Susanne Harlandt, Coordinator of Adult Education, to expand the repertoire of offerings in an organized, attractive manner.

—SUSAN DOUGLAS  
*Chair,  
Education Department*

## Research

THE PAST YEAR has been an active and exciting one for the Research Division, with the arrival of outstanding new staff scientists, continued expansion of existing research programs, and an important new initiative in systematics—the development of a laboratory for comparative studies using molecular techniques.

Dr. Linda S. Cordell joined the staff on January 15, 1987, as Irvine Chair of Anthropology and department head. An internationally respected authority on the prehistory of the American Southwest, Dr. Cordell left her post at the University of New Mexico, where she was Chair of the Anthropology Department and Acting Vice-President for Research. In just the past few months, activity in anthropology at the Academy has increased dramatically—just as we expected in selecting Dr. Cordell through a worldwide recruitment effort.

Dr. Jacques Gauthier was selected for a five-year contract appointment in the Herpetology Department, to join the staff in July 1987, as an Assistant Curator. Dr. Gauthier is completing a post-doctoral appointment at the University of Michigan. His research interests center on phylogenetic relationships among reptiles, and his past work has explored the relationships between dinosaurs and birds.

The Academy's participation in a special fellowship program offered by the Christensen Research Institute (CRI) in Madang, Papua New Guinea, has continued, resulting in extensive field work in that area and collection development by Academy staff scientists. A primary objective of Academy scientists involved in this program is to assist CRI and provincial and national agencies in Papua New Guinea with an inventory of the biota of Madang Province.

The major new research initiative during the year was development of our Molecular Systematics Laboratory, which will serve as a multi-user facility for the application of molecular techniques in systematics. Dr. David Jameson, now completing his teaching commitments at the University of Houston, will join the Academy scientific community to head up the lab in January 1988. Dr. Jameson pioneered the use of mitochondrial DNA studies in systematics. Dr. Michael Ghiselin, Academy Senior Research Fellow, and Dr. Terry Gosliner, Associate Curator of Invertebrate Zoology, also have undertaken a research project, with

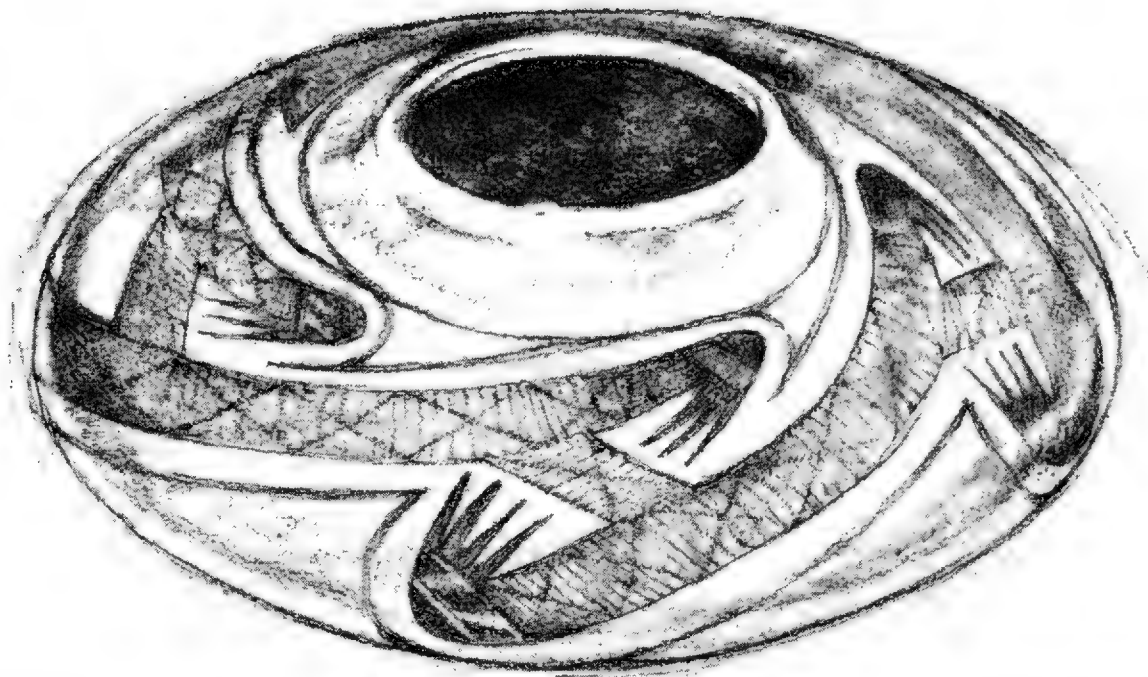
National Science Foundation support, that will make use of the lab for comparative studies of ribosomal RNA and their evolutionary implications for mollusks. We hope that these are just the first of many projects that will use the facility; and we anticipate capabilities for the application of other molecular techniques in systematics in the future.

Once again, Academy staff scientists dispersed widely for their field research. Areas visited outside of California include



*Botany department Curatorial Assistant Colleen Sudekum mounting a begonia from Costa Rica's vanishing rainforest. The specimen was collected by Curator Frank Almeda in February 1986 during field studies supported by a gift from Nathan Jay and Virginia Friedman.*





Oregon, Washington, Alaska, Hawaii, New Mexico, Alberta, British Columbia, Mexico, Guatemala, Panama, Venezuela, Jamaica, Dominican Republic, Puerto Rico, Trinidad and Tobago, the Caribbean, China, Korea, India, Nepal, Papua New Guinea, New Caledonia, Palau, Tonga, Tahiti, the Solomon Islands, Australia, Kenya, and South Africa. Specimens and data gathered in these near and distant lands have added extensively both to the Academy's collections and to the scholarly studies of its staff.

The use, maintenance, and growth of the Academy's systematic collections remained a primary concern of research and other curatorial staff. Work on the compact storage units in the Invertebrate Zoology and Geology Department continued, with units for the storage of dry collections completed and occupied during the year and construction started on units for the collections stored in fluids. With help from the City and County of San Francisco, and as part of the seismic upgrading of North American Hall, an additional 8,000 square feet of potential collection storage space was improved under North American Hall. Under the direction of Academy Librarian Tom

*The Academy's anthropology collections are particularly strong in ethnographic objects representing native peoples of the American west and southwest. This Hopi seed jar was made by the potter Nampeyo, who revived the traditional prehistoric Hopi ceramic styles. In 1905 it was given as a Christmas gift to Bureau of Indian Affairs physicians Jacob and Maria Breid in Kings Canyon, Arizona. In 1987 it was donated to the Academy by their daughter, Mrs. Elizabeth Breid McFarland.*

Moritz, the Library began a program of much needed reorganization and upgrading of facilities and services, with some modifications completed in the first floor reading room and current periodicals areas.

More than 81,000 specimens were loaned in 800 separate transactions to scientists around the world in support of systematic research during the year. Research departments accommodated more than 3,800 individual visits during the year; and another 2,200 individuals in groups toured our facilities and interacted with staff. On average, about 11 visiting scientists were on site using our collections each working day throughout the year. More than 264,000 specimens

were newly accessioned into the Academy's collections this year, and total holdings are now at about 13.8 million specimens. Use and growth of departmental collections during the year are summarized in the Table.

Six of our seven departmental collections received major curatorial support grants, through the National Science Foundation's (NSF) Biosystematic Research Resources Program. Figures recently published by the Foundation show that the Academy ranks second only to Harvard University in the total amount of awards received through this program since it began in 1972—an indication of the importance of scientific resources housed here to the scientific community.

Another very encouraging trend this past year was seen in funding of research grants to Academy scientists. Traditionally, relatively few staff researchers have sought or obtained major outside funding for their research. However, four of our staff scientists held NSF research grants at year's end, two of these awarded during the past eighteen months; and three additional, highly competitive proposals are currently under review. This, I feel, is yet another significant indication of the positive direction in which the Academy's research program is heading.

—DAVID KAVANAUGH  
Director of Research

#### GROWTH AND USE OF COLLECTIONS IN RESEARCH DEPARTMENTS

##### Divisional Summary

DEPARTMENT	ACQUISITIONS	LOANS	RESEARCH
	Total Specimens Accessioned	Total Specimens Loaned	Total Visitors (no. of visitor days)
Anthropology	167	152	73
Aquatic Biology	n/a	n/a	664
Botany	14,000	15,573	745
Entomology	216,956	59,600	1,085
Herpetology	3,378	1,294	249
Ichthyology	5,215	1,571	212
Invertebrate Zoology and Geology	25,000	2,000	192
Ornithology and Mammalogy	648	834	716

# THIS YEAR AT THE ACADEMY

## Development

### DEVELOPMENT

Private support from individuals, foundations, and the business community to the California Academy of Sciences totaled \$5.8 million in 1986-1987. Both the number of gifts and the total dollars raised toward the Academy's operating budget increased over previous years, despite the fact that fundraising focused on the "Academy for the '90s" Capital Campaign, the first phase of the master plan.

Under the continued chairmanship of Trustee William J. ("Jerry") Hume, the Development/Membership Committee of the Board of Trustees is focusing on raising Annual Fund donations from individuals and corporations for the Academy's operating budget during the 1987-1988 year. The 1987-88 Annual Fund goal is to increase funds raised by 21%. Corporate donor clubs for \$250-\$10,000+ contributions, and two new donor clubs with special benefits for \$2,500 and \$10,000+ gifts from individuals have been established.

### MEMBERSHIP

Membership in the California Academy of Sciences increased from 21,300 to 22,000 persons. Two direct mail campaigns generated 2,900 new members during the year. Monthly drawings held

for Academy visitors continued to augment the list of new names for future membership appeals. Marketing efforts designed to retain current members included Saturday morning membership orientations, renewal mailings, and a spring "behind-the-scenes" open house which attracted 2,700 members and their guests.

### SPECIAL EVENTS

The Special Events Department coordinated fifty Academy events including opening receptions for "The Great Central Valley," "Lifelong Safari," "Animal Artists," and "Birds in Art" exhibits; the annual Friends Dinner; the Fellows' Banquet; and the Penguin Club Party. Firms and other groups rented Academy facilities for forty-five events, generating \$135,000. Renters included Computerland, SQUIBB, Transamerica Corporation, Blue Cross, ElectroNucleonics, National Geographic, and the San Francisco Chronicle.

"Tropical Splendors," the second annual Academy Ball, held in October 1986, raised \$71,000 toward the Academy's general operations. The gala evening was produced under the leadership of Chair Mrs. William (Rosemary) Hewlett and Corporate Chair Carl Reichardt of Wells Fargo Bank, with the enthusiastic assistance of many volunteers.

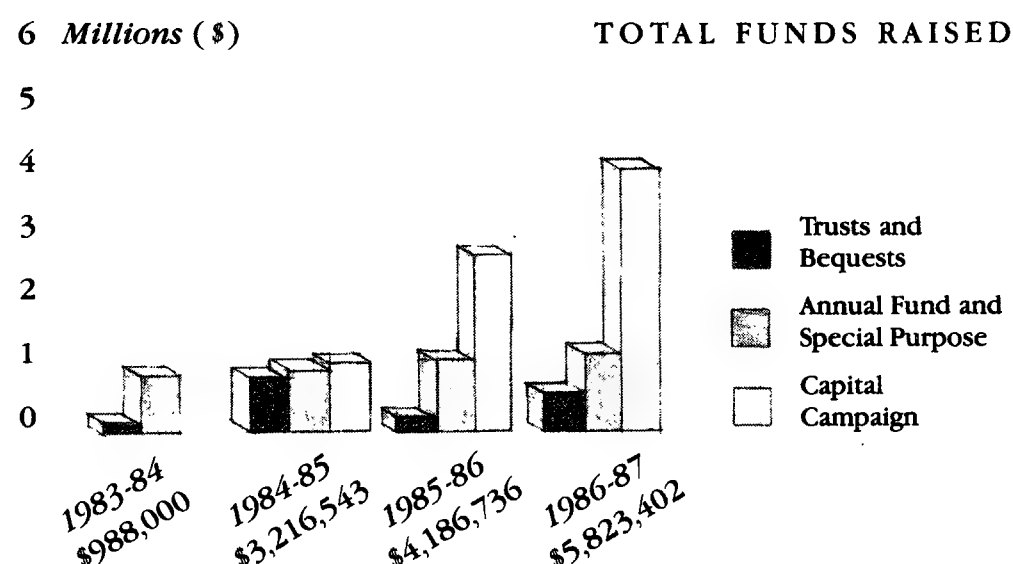
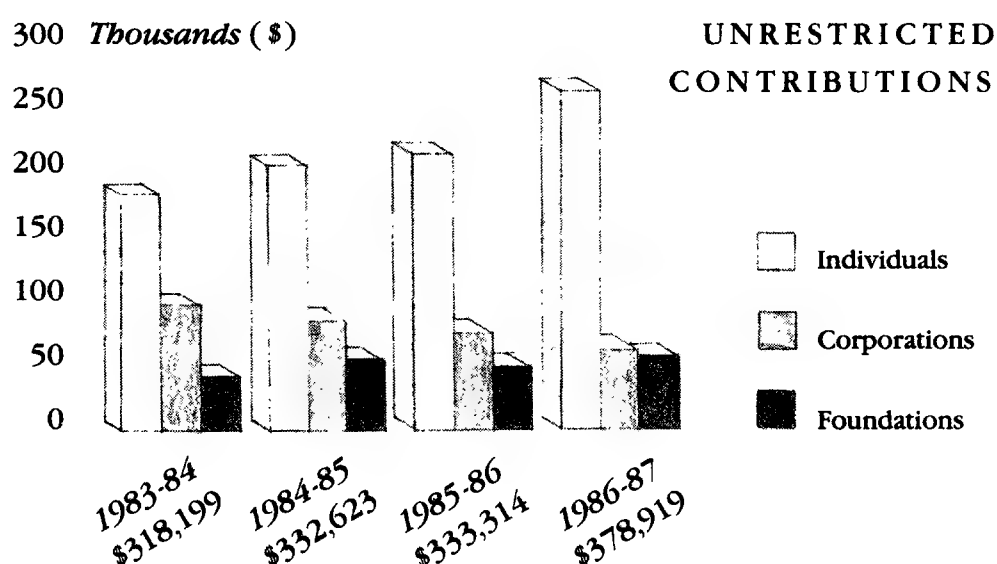
### SPECIAL PROGRAMS AND INTERNATIONAL TRAVEL

The Academy sponsored twelve tours to a variety of destinations including Antarctica with Dr. John McCosker; Kenya and Tanzania with Elizabeth Dunbar; and the Swiss and Italian Alps with Dr. Frank Almeda. Over 250 Academy members participated in the travel program with donations from the tours supporting the ongoing programs of the museum.

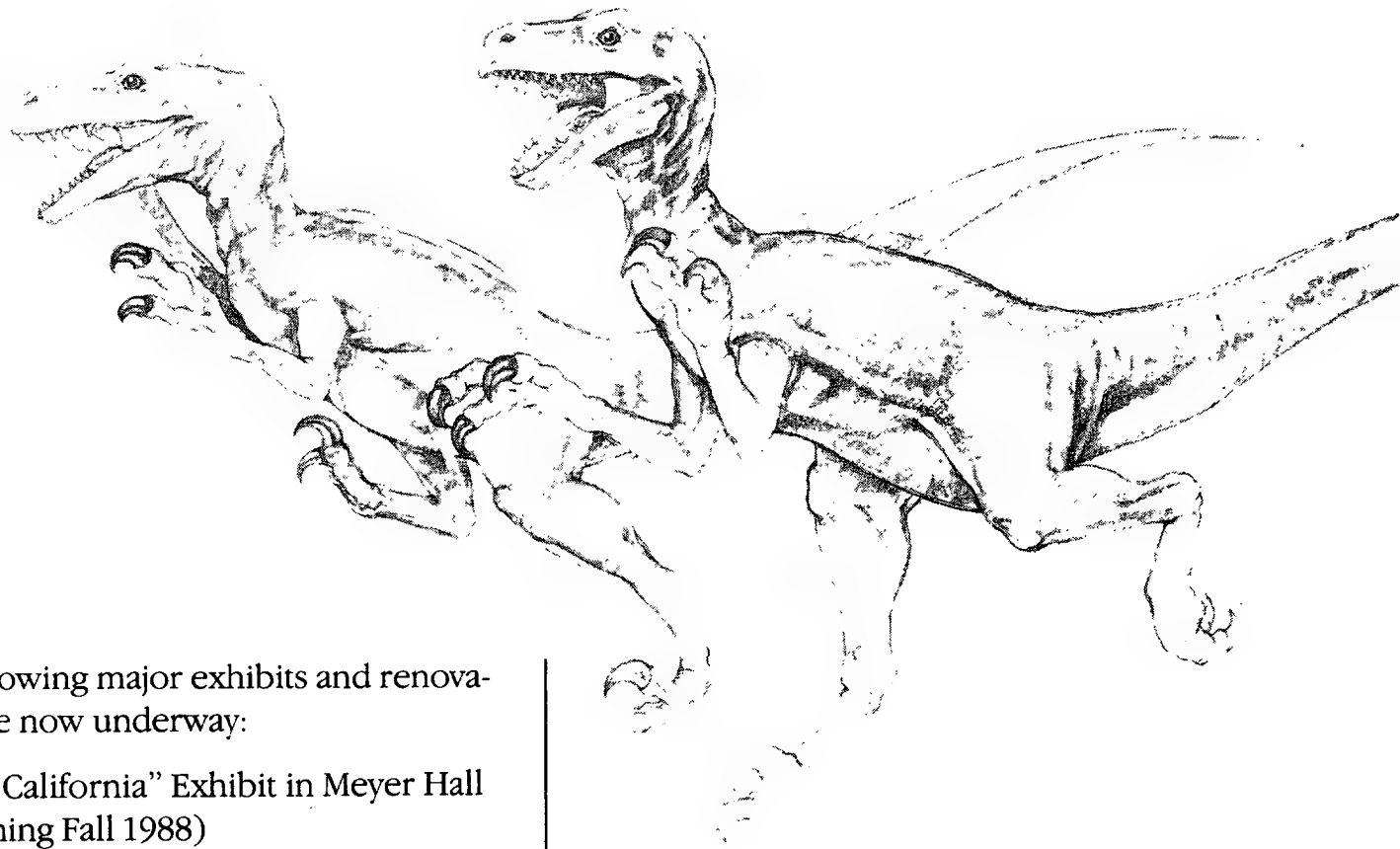
The annual Claire Matzger Lilienthal Distinguished Lecturer Program featured Dr. James Lovelock and Dr. Lynn Margolis who spoke on "The Gaia Hypothesis." Other lectures and programs included the biannual symposium, "The Biomedical Importance of Marine Organisms," and members' meetings featuring a variety of natural history topics ranging from "The Origins of Mankind," with Dr. Richard Leakey, to "Everest '85" with trekker and climber Brian O'Malley.

### "ACADEMY FOR THE '90s" CAPITAL CAMPAIGN

Guided by Board of Trustees Chairman Jeffery W. Meyer, the California Academy of Sciences set a goal of raising \$12.8 million as the first phase of a major capital campaign. This campaign goal was met in October 1987 with \$15.3 million raised.







The Campaign Committee included Jeff Meyer, Jerry Hume, Peter McBean, Rudolph Peterson, Elizabeth Schilling, and Eugene Shurtleff.

Thanks to the "Academy for the '90s" Campaign, we are already seeing long-awaited improvements in the museum:

- The Academy Store
- Cowell Hall Signage and Orientation
- G Dallas Hanna Chair in Geology
- Seismic Upgrading of Meyer Hall basement
- Reinstallation of Gems and Minerals Hall
- Rental of a downtown Exhibits Production Facility

The following major exhibits and renovations are now underway:

- "Wild California" Exhibit in Meyer Hall (Opening Fall 1988)
- "Life Through Time" Exhibit in Peterson-McBean Hall (Opening 1989)
- Jewett Oceans Hall
- Herbst Front Entrance

Other newly funded items include: Aquarium Improvements, Fire Safety Systems, Planning and Administration, Molecular Laboratory, Endowment, and Utilities Upgrade.

*Powerful legs and a huge claw on each hind foot gave the man-size carnivorous Deinonychus dinosaur fearsome weapons against its prey. Three full-size Deinonychus specimens based on these scale models will be included in the Life Through Time exhibit opening fall 1989 in Peterson-McBean Hall.*

***The California Academy of Sciences is very grateful to the following  
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1985 Academy Ball,  
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 Paula J. Barry, *SE*  
 Ellen Barth, *Do*  
 Brooks Bateman, *SE*  
 Jeff Beal, *Aq, Ic*

Sandra Beddow, *Cl, DR, SE*  
 Frank Beering, *Ex, Cl*  
 Hamilton Begay, *Aq*  
 Marion Bellingall, *Do*  
 Stanley Benedict, *En*  
 Fay Benson, *Cl, ID, SE*  
 Phillip Bentley, *DR*  
 Amelia Berry, *Do*  
 Loraine Berry, *Do*  
 Catherine Best, *Bo*  
 Leslie Bethke, *Cl, DR*  
 Cynthia Biasca, *IG*  
 Patricia Biello, *Do*  
 Ashton Bisbee, *Do, Aq*  
 JoAnn Bishop, *DR, SE*  
 Timothy Blanchard, *IG*  
 Bob Blizard, *SE*  
 Jackie Blum, *Aq*  
 Marian Boede, *Do*  
 Rhonda Bolden, *Aq*  
 Joyce Bonifield, *Cl, Ex*  
 Roberta Borgonovo, *Do*  
 Gabriella Borsay, *IG*  
 Priscilla Botsford, *Aq*  
 Sandra Bourdet, *Do*  
 Ronda Bouyea, *Aq, SE*  
 Robert Bowler, *Aq*  
 Ethan Boyer, *Aq*  
 Anita Bozzi, *Aq*  
 Chuck Branch, *Aq*  
 Jessica Branch, *Aq*  
 Will Brandenburger, *Aq*  
 Therese Brandi, *Do*  
 Ann Brawner, *Ex*  
 Caran Brawner, *Aq*  
 Nancy Breedlove, *Bo*

Debbie Brennan, *En*  
 Marti Brennan, *DR*  
 Lee Brenneisen, *Do*  
 Susannah Breslin, *Aq*  
 Buddy Britton, *Aq*  
 Blanka Brock, *Li-Sc*  
 Joanne Bruggemann, *ID*  
 Amy Bryant, *DR, Aq, SE, Cl*  
 Juliette Bryson, *DR, SE*  
 Paul Budiman, *Ex*  
 Paula Buickerood, *En*  
 Jairo Buitrago, *Cl*  
 Sylvia Bunshoft, *Do*  
 Dale Burnham, *Ex*  
 Barbara Burns, *An*  
 Michael Burns, *Aq, Cl*  
 Justyna Burr, *Do*  
 Matthew Burruss, *Aq*  
 Rex Butler, *An*  
 Teresa Butler, *Aq, Cl*  
 Alberto Cabrera, *He*  
 Mary Louise Cadenasso, *Aq*  
 Denise Cadmar, *Aq*  
 Carroll Cahill, *Aq*  
 Patricia Caldeira, *Aq*  
 Ernesto Calix, *Cl, Ic, IG, SE*  
 Nan Callender, *Ex*  
 Susan Camp, *An*  
 Sherrie Carlson-DePuy, *Ed*  
 Betty Carman, *Do*  
 Lisa Carne, *Aq*  
 Betty Carpenter, *AE*  
 Donald M. Carpenter, *Aq*  
 Diane Carroll, *An*  
 Elizabeth Carroll, *ID*  
 Shana Carroll, *Aq*



Patricia Case, <i>An</i>	Heidi Edwards, <i>En</i>	Marie Hagelstein, <i>SE</i>	William Kaye, <i>Do</i>	Christopher Mah, <i>Aq</i>
Lyman Casey, <i>Aq</i>	Lee Edwards, <i>Do</i>	Thomas Hale, <i>Aq</i>	William Keeler, <i>IG</i>	Richard Mainzer, <i>Aq</i>
Mary Castellini, <i>Bo</i>	Ben Elkus, <i>Li-Sc</i>	Betty Hall, <i>Do</i>	Bill Keener, <i>IG</i>	Brent Malarkey, <i>Do</i>
Andy Chamberlin, <i>DR, SE</i>	Karren Elsbernd, <i>Li-Sc</i>	Joseph Hall, <i>OM</i>	John Keitel, <i>Aq</i>	Justin Mallen, <i>Aq, Cl</i>
David Chang, <i>En, IG</i>	Helen Engh, <i>Do</i>	Linda Hall, <i>Aq</i>	Rosina Kendall, <i>ID</i>	DeAda Mally, <i>Bo</i>
Alexandra Chappell, <i>DR</i>	Richard Epstein, <i>Ex</i>	Elaine Hamilton, <i>AE</i>	Karen Kerner, <i>DR</i>	Mary Malone, <i>Aq</i>
Alan Charne, <i>Do</i>	Beryl Ertola, <i>Li-Sc</i>	Mary Hancock, <i>Ex</i>	Doris Ketcham, <i>Li-Sc</i>	R. Emmett Malone, <i>Aq</i>
Larry Charland, <i>Ex</i>	Gloria Escobar, <i>Ex</i>	Nicolas Haoa, <i>SE</i>	Eileen Kincaid, <i>IG</i>	Irene Manfredi, <i>Aq</i>
Josiah Chase, <i>Do</i>	Helene Ettelson, <i>DR</i>	Robin Harada, <i>Do</i>	Maira Kingston, <i>Do</i>	Lia Manfredi, <i>Aq</i>
Helen Chellin, <i>Ex</i>	Carol Evans, <i>Do, Aq</i>	Jacklyn Harang, <i>AE</i>	Volker Kirstein, <i>ID</i>	Natalie Manfredi, <i>Aq</i>
Stephen Cheung, <i>IG</i>	Marilyn Evans, <i>DR</i>	Chili Hare, <i>Aq</i>	Anita Kitses, <i>SE</i>	Ellis Marek, <i>Ad, Cl</i>
Eva Chu, <i>Do</i>	W. Barrett Evans, <i>Aq</i>	Tom Harrington, <i>OM</i>	Naomi Knickerbocker, <i>Aq</i>	Dan Margulis, <i>Ex</i>
Stephen Cicornio, <i>Aq</i>	Robert Failing, <i>OM</i>	Holly Harris, <i>OM</i>	Gertrude Knight, <i>AE</i>	Jo Markovich, <i>ID</i>
Kathleen Clahan, <i>Do</i>	Ben Fairrow, <i>Aq</i>	Kimberley Harris, <i>DR</i>	Marty Knowlton, <i>OM</i>	Joseph Marshall, <i>Do</i>
Robert Clarke, <i>Do</i>	Ellen Farrow, <i>Ex</i>	John Harrold, <i>Cl, SE</i>	Connie Koch, <i>Do</i>	Andy Martin, <i>Aq</i>
Jane Coffey, <i>Ex</i>	Ellen Felcher, <i>Ex</i>	E.A. Hartsook, <i>Do</i>	Jimmie Kolesar, <i>Aq</i>	Linda Martin, <i>ID</i>
Ruth Coffey, <i>Do</i>	Jeanne Felton, <i>Do</i>	Jean Harvey, <i>Do</i>	Yoshiko Konno, <i>Aq</i>	Sylvia Martinez, <i>Pl</i>
Leah Cohen, <i>Do</i>	John Fenech, <i>En</i>	Agnes Haslam, <i>Aq, Cl</i>	Lisa Krieger, <i>Aq</i>	Nancy Martling, <i>DR</i>
Bonita Cohn, <i>Ex</i>	Mildred Fenton, <i>Do</i>	Peter Haugen, <i>Aq</i>	Nicolas Krivkov, <i>Aq</i>	Martha Masterson, <i>Ex</i>
Anne Cohler, <i>Do</i>	Eileen Fernandez, <i>DR</i>	Jenny Helbraun, <i>An</i>	Martha Kropf, <i>Do</i>	Susan Matheson, <i>IG</i>
Jennifer Cole, <i>He</i>	Jeanne Ferrari, <i>AE</i>	Helen Heller, <i>Do</i>	Alison Kubick, <i>Do</i>	Joseph Maynes, <i>SE</i>
Chris Coleman, <i>An</i>	James Fidiam, <i>Li</i>	Lilo Hendrix, <i>Do</i>	Marie B. Kuck, <i>Do, DR</i>	Peggy Maynes, <i>SE</i>
Virginia Coleman, <i>Do</i>	Bruce Filer, <i>Aq</i>	Yaye Herman, <i>Do, DR</i>	Brian Kunde, <i>Li</i>	Shirley McArdell, <i>DR</i>
Thomas Colman, <i>Li</i>	Georgie Finnerty, <i>Do</i>	Fred Herms, <i>Aq</i>	Joshua La Force, <i>Aq</i>	Hilda McAvin, <i>Do, Ed, Ex</i>
Elsie Collins, <i>AS</i>	Jean Fisher, <i>Do</i>	Sam Herzberg, <i>Aq</i>	Robert Lai, <i>Pl</i>	Elizabeth McCarthy, <i>Pl</i>
Joseph Condra, <i>Li-Sc</i>	Tara Fitz-Gerald, <i>Aq</i>	Bruce Heyer, <i>Aq</i>	Monica Lake, <i>Aq</i>	Jean McCauley, <i>Do</i>
Marilyn Conrad, <i>Ex</i>	Barbara Fitzgerald, <i>Aq</i>	M. Phyllis Heywood, <i>Do, Li-Sc</i>	Cindy Lake-Thomas, <i>Li-Sc</i>	Alice McCleskey, <i>Li</i>
Paul Conroy, <i>Ex</i>	Sharon Fitzgerald, <i>SE</i>	Del Loris Higgins, <i>Do</i>	Louise Lambert, <i>DR</i>	Judy McCubbin, <i>Do</i>
Tim Conway, <i>Aq</i>	Catherine Fitzpatrick, <i>Li-Sc</i>	Stephen Hillenburg, <i>Ex</i>	Diana Lamson, <i>Ex</i>	Shirley McCune, <i>AE</i>
Liz Cook, <i>Aq</i>	James Fitzpatrick, <i>Li-Sc</i>	Felisa Hitchcock, <i>OM</i>	Daniel Langlands, <i>IS</i>	Pamela McFarlin, <i>ID</i>
Esther Cooper, <i>SE</i>	Diana Flasher, <i>En</i>	Jane Hochman, <i>Do</i>	Robert Langston, <i>En</i>	Cecilia McGhee, <i>PD</i>
Connie Cordingley, <i>Aq</i>	Jane Foltz, <i>Do</i>	Jennifer Hodgson, <i>Aq</i>	Rachel Lanzerotti, <i>Ic</i>	Maureen McGowan, <i>Do</i>
Lysbeth Corsi, <i>Ex, IS</i>	Roger Foo, <i>DR</i>	Brenden Holland, <i>Aq</i>	Elly Lapham, <i>Ex</i>	Gwyneth McKay, <i>Ex</i>
Deborah Cotter, <i>OM</i>	Carol Fotenos, <i>Do</i>	Linda Holleman, <i>An</i>	Ruth Lasky, <i>Do</i>	Kevin McKean, <i>Ex</i>
Ellen Cowley, <i>Do</i>	Mary Ann Hobbs Frakes, <i>Do</i>	Mathew Hollis, <i>Aq</i>	Patricia Latas, <i>Aq</i>	Diallo McLinn, <i>Ed</i>
Ella Coyne, <i>AS</i>	Vicki Francies, <i>IG</i>	Mildred Holota, <i>Do</i>	Eleanor Lawry, <i>Do</i>	Pamela McNay, <i>Do</i>
Robert Craig, <i>IG</i>	Leslie Freund, <i>DR</i>	Barbara Holt, <i>AE</i>	Vickie Le Gras, <i>DR</i>	John McPherson, <i>AE</i>
Joseph Croco, <i>He, Ic</i>	Rick Friedling, <i>Li-Sc</i>	Ingrid Holtzman, <i>Do</i>	Harper Leah, <i>Aq</i>	Jim Meakin, <i>Aq</i>
Amanda Cummings, <i>IG</i>	Joan Friedman, <i>Do</i>	Paul Holtzman, <i>Do</i>	Dielle Lee, <i>Li-Sc, Ex</i>	Patricia Mei, <i>Do</i>
Jim Cunningham, <i>OM</i>	Alberta Fross, <i>ID</i>	Florence Holub, <i>Do, Ex</i>	Jennet Lee, <i>Ex</i>	Alan Meier, <i>Do</i>
Juli Cunningham, <i>An</i>	Nancy Fuller, <i>Do, DR</i>	Sarah Hones, <i>DR</i>	Becca Leeper, <i>Aq</i>	Jane Meiggs, <i>DR</i>
Evelyn Curry, <i>Do</i>	Sue Ann Furbee, <i>Do</i>	Herbert Hoover, <i>IS</i>	Yvonne Leever, <i>Do</i>	Maureen Meikle, <i>AE</i>
Nathan Cutler, <i>Ex</i>	Robert Galbraith, <i>Li-Sc</i>	Todd Hopkins, <i>Aq</i>	Enid Leff, <i>OM</i>	Barbara Melcher, <i>SE</i>
Dale Dagle, <i>AE, ID</i>	Jane Galvan, <i>Do, DR</i>	Toni Hopping, <i>Li</i>	David Legge, <i>Do</i>	Martin Melia, <i>IG</i>
Frances Dahlstrom, <i>Do</i>	Mary Galvan, <i>Ex</i>	Stephen Hord, <i>Do</i>	Sally Legge, <i>Do</i>	Chris Menard, <i>Aq</i>
Joe Dal Porto, <i>Aq</i>	Robert Michael Gandel, <i>Aq</i>	Sharon Horelick, <i>SE</i>	Mike Lehmann, <i>Aq</i>	Karl Menard, <i>Aq</i>
Patricia Dal Porto, <i>Do</i>	Evelyn Gara, <i>Do, Aq, Cl</i>	Stephen Horn, <i>Pl</i>	Mary Lemon, <i>Li</i>	Bill Merkel, <i>Aq</i>
Carol Daniels, <i>Li-Sc</i>	Mary Garcia, <i>IG</i>	Catherine Horner, <i>Do</i>	Rebecca Leventhal, <i>Ed</i>	Anastacia Metcalf, <i>ID</i>
Emily Date, <i>Do</i>	Esther Gardner, <i>Do</i>	Lynn Howard, <i>Ex</i>	Shirley Levy, <i>Do</i>	Louise Meyer, <i>ID</i>
Elsa L. Davidson, <i>Ex</i>	Sadye Garfinkel, <i>ID</i>	Tim Howe, <i>Aq</i>	Constance Lewis, <i>Do</i>	Richard Meyerhoff, <i>Do</i>
Beryleen Davis, <i>Do, Aq</i>	David Garry, <i>IG</i>	Irene Huddle, <i>ID</i>	James Lewis, <i>Do</i>	Robert Miche, <i>Aq</i>
Tom Day, <i>Do</i>	Sally Gati, <i>An</i>	Barbara Hudler, <i>SE</i>	Linda Liebelt, <i>Ex</i>	Buffi Miller, <i>Aq</i>
Cindy Anne Deaver, <i>Aq</i>	Carol Gayton, <i>Bo</i>	Sanders Hum, <i>En</i>	Ellen Lieber, <i>Do</i>	Gene Miller, <i>Do</i>
Michele De Jager, <i>Aq</i>	Lionel Gazeau, <i>Do</i>	Robert Husing, <i>DR</i>	Linda Lieberman, <i>DR</i>	Julie Miller, <i>Aq</i>
Ellen Del Valle, <i>He</i>	Dave Gazarian, <i>Ex</i>	Betty Hutchinson, <i>Do</i>	Bob Lilienthal, <i>Do</i>	Verdi Miller, <i>An</i>
Richard DeLuca, <i>Do</i>	Erna Geils, <i>ID</i>	Marjorie Iller, <i>DR</i>	Sandy Linder, <i>Do</i>	Trudy Millerstrom, <i>AE</i>
Eames Demetrios, <i>Aq</i>	Eleanor George, <i>Ex</i>	Virginia Ingham, <i>Ex</i>	Quenton Lindsey, <i>En</i>	Jane Mills, <i>Do</i>
Lucia Demetrios, <i>Do</i>	Joanne Germano, <i>Ex</i>	Peter Ingmire, <i>Aq, Cl</i>	Michael Linhares, <i>Aq</i>	William Miloglav, <i>Do, DR</i>
Craig Denisoff, <i>Aq</i>	Janet Giannini, <i>DR</i>	Kerry Irons, <i>IG</i>	Nancy Linscott, <i>Ex</i>	Charles Mink, <i>AE</i>
Stuart Denton, <i>OM</i>	Ginger Gibbs, <i>Aq, SE</i>	Jacqueline Jacobson, <i>Do</i>	Ellen Lipkin, <i>Aq</i>	Loren Modesitt, <i>Aq</i>
Leslie Despotakis, <i>Ex, ID, SE</i>	Ruth Gibbs, <i>Do</i>	Karen Jacobsen, <i>Aq</i>	Lois Lippincott, <i>Do</i>	Sylvia Montano, <i>Aq</i>
Bep DeVries, <i>AE</i>	Margaret Giovingo, <i>DR</i>	Howard James, <i>DR</i>	Elizabeth Livingston, <i>Do</i>	Scott Moran, <i>Aq</i>
Livia DeWath, <i>DR</i>	Sam Glorioso, <i>Do</i>	Glady Janoff, <i>Do</i>	Wayne Llano, <i>Aq</i>	Joshua Morenstein, <i>Aq</i>
Christina deWit, <i>DR</i>	James Goebel, <i>Aq</i>	Tom Jarvis, <i>AE</i>	Edwin Lockwood, <i>Aq</i>	Austin Morrill, <i>DR</i>
Karma DeWitt, <i>Do</i>	Chip Golden, <i>Aq</i>	Jill Jekot, <i>Aq</i>	Matthew Lockwood, <i>Aq</i>	ZeeZee Mott, <i>Do</i>
Judy Diamond, <i>DR</i>	Teal Good, <i>Aq</i>	Carla Johnson, <i>Aq</i>	Lydia Lofgren, <i>IG</i>	Erin Mulligan, <i>Aq</i>
Susan Dinsmore, <i>Aq, Cl</i>	Janet Goodman, <i>Do</i>	Connie Johnson, <i>Aq</i>	Margurite Longtin, <i>Bo</i>	Willa Mundell, <i>Do</i>
Kathryn Dodd, <i>Pl</i>	Marj Goodner, <i>Do</i>	Hayward Johnson, <i>ID</i>	Kurt Loret, <i>Li</i>	William Munich, <i>IG</i>
Kim Dodd, <i>Do, Aq</i>	Geraldine Gorney, <i>DR</i>	Heather Johnson, <i>DR</i>	Mathew Lorinez, <i>Ex</i>	Katie Murphy, <i>Cl, SE</i>
Sean Dougherty, <i>Aq</i>	Geri Gottbrath, <i>SE</i>	Mark Johnson, <i>OM</i>	Molley Lowry, <i>Cl, Ed</i>	Valerie Myint, <i>Ed</i>
Dolores Drew, <i>Ad, Cl, Ex, SE</i>	Gale Gough, <i>SE</i>	Megan Johnson, <i>Aq</i>	Xander Lowry, <i>Aq</i>	George Nachtrieb, <i>Aq</i>
Brian Driscoll, <i>DR, SE</i>	Mary-Anne Grady, <i>Do</i>	Hilary Johnson DVM, <i>Aq</i>	Lawrence Lucks, <i>Do, Li</i>	Regina Naguiat, <i>SE</i>
Keith Dubinsky, <i>Ex</i>	Elizabeth Graham, <i>Ex</i>	Edward Jones, <i>Do</i>	Frank Ludwig, <i>Pl</i>	Genevieve Nejin, <i>ED</i>
John Dubrovich, <i>En</i>	Linda Grant, <i>DR, SE</i>	Howard Jones, <i>Li-Sc</i>	Kiamara Ludwig, <i>Ex</i>	Dora Nelson, <i>ID</i>
Teri Dumais, <i>Ex</i>	Kathy Green, <i>Aq</i>	Tyson Jue, <i>En</i>	Mark Luellen, <i>Ex</i>	Marianne Newton, <i>SE</i>
Sheri Dunklau, <i>Ad, SE</i>	Mary Green, <i>Ad, SE</i>	Douglas Kain, <i>OM</i>	Andrew Lui, <i>Aq</i>	Craig Nikitas, <i>Aq</i>
Jesse Dunn, <i>Aq</i>	Marifrances Greenland, <i>Do</i>	June Kani, <i>Do</i>	Vivian Lui, <i>ID</i>	Carmela Nilan, <i>DR</i>
Lynn Dunne, <i>Do</i>	Thomas Greunke, <i>Aq</i>	Ruth Kamena, <i>DR, SE</i>	Judy Lum, <i>Ed</i>	Maio Nishkian, <i>DR</i>
Robert Dunne, <i>Pl</i>	Beau Griffith, <i>Do</i>	Karena Kamins, <i>Aq</i>	Janice Lundberg, <i>Ph</i>	Lawrence Nold, <i>Aq</i>
Jo Ann Durnian, <i>DR</i>	Mihal Grunfelder, <i>Aq</i>	Nicoletta Karam, <i>Aq, Cl</i>	Karin Lundstrom, <i>Ex</i>	Marion Norberg, <i>Do</i>
Michael Durnian, <i>DR</i>	Rick Haas, <i>Ex</i>	Ulrich Karrer, <i>IS</i>	Mildred Lusardi, <i>Do, DR</i>	Mary Frances Norman, <i>Do</i>
Patricia A. Dustman, <i>Aq</i>	Sylvia Haas, <i>SE</i>	Tom Kashiyama, <i>Aq</i>	Pat Lynch, <i>Do</i>	Shirim Nothenberg, <i>Aq</i>
Shanna Edelson, <i>DR</i>	Ruth Haber, <i>DR</i>	Marion Kass, <i>Ex</i>	Jackson Maddux, <i>Aq</i>	Roma Jean Noyes, <i>Do</i>
Albert Edgerton, <i>Aq</i>	Patricia Haddock, <i>DR</i>	Diana Kaus, <i>DR</i>	Tilly Maddux, <i>Do</i>	Mary Nybakken, <i>Ex</i>

Kevin O'Donnell, <i>He</i>	Julia Sauer, <i>Ex</i>	George Swortfiguer, <i>AE</i>	Soher Youssef-Walker, <i>Li</i>	<i>Ed</i>	Education
Hayden O'Shea, <i>Aq</i>	Alexandra Saunders, <i>AS</i>	Catherine Syversen, <i>ID</i>	Edwin Yuen, <i>En</i>	<i>En</i>	Entomology
Katie O'Shea, <i>Aq</i>	Elizabeth Sayer, <i>Do</i>	Isidore Szczepaniak, <i>OM</i>	Flora Zagorites, <i>ID</i>	<i>Ex</i>	Exhibits
Arthur Ober, <i>Ad, AE, ID, SE</i>	Denis Scannell, <i>Aq, Cl</i>	Eyisha T'eo, <i>OM</i>	Margaret Zankel, <i>Do</i>	<i>He</i>	Herpetology
Adair Oesterle, <i>Aq, Cl, SE</i>	Judy Schaefer, <i>DR</i>	Kim Taddei, <i>En</i>	Pam Zeidell, <i>Ex, IS, SE</i>	<i>Ic</i>	Ichthyology
Larry Oliveria, <i>IG</i>	Maria-Verena Schelling, <i>OM</i>	Joyce Talal, <i>Ex</i>	Harriet Ziesenis, <i>Li-Sc</i>	<i>ID</i>	Information Desk
Margaret Orr, <i>DR</i>	Diana Schindler, <i>Do</i>	Sue Talbot, <i>Do</i>	Cay Zilka, <i>Do</i>	<i>IG</i>	Invertebrates
Caroline Orrick, <i>Do, IG</i>	Josh Schindler, <i>Aq</i>	Alice Tallent, <i>DR</i>	Diane Zuendt, <i>Li-Sc</i>		& Geology
Dorothy Oster, <i>Do</i>	Marjorie Schmelzer, <i>IG</i>	Webster Tasat, <i>Ex</i>	Lisa Zukovsky, <i>Ex</i>	<i>IS</i>	Instrument Shop
Rozell Overmire, <i>Do</i>	Herb Schmidt, <i>Do</i>	Bill Tergis, <i>Do</i>		<i>Li</i>	Library
Benjamin Owen, <i>Aq</i>	LaVerne Schmidt, <i>Do</i>	Emily Terkelson, <i>ID</i>		<i>Li-Sc</i>	Library—
Martie Pack, <i>Ad, SE</i>	Jacqueline Schonewald, <i>OM</i>	Noreen Therrien, <i>DR</i>	<i>Ad</i>		Special Collections
Susan Pagani, <i>Aq</i>	Alexis Schuler, <i>He</i>	Genevieve Thiebaut, <i>SE</i>	<i>AE</i>	Administration	
Heidi Palacios, <i>Do, DR</i>	Stacie Schultz, <i>SE</i>	Sandra Thirtyacre, <i>DR</i>	<i>AE</i>	Academy Escort	
Christina Pallman, <i>Aq</i>	Ray Schwartz, <i>IS</i>	Kristen Thomas, <i>An</i>	<i>An</i>	Anthropology	
Carole Pandell, <i>Do</i>	Norman Scott, <i>Do</i>	Geoffrey Thompson, <i>Aq</i>	<i>Aq</i>	Aquarium	
Bernadette Paolini, <i>Ex</i>	Ruth Scott, <i>Do</i>	Anna Thomson, <i>Do, Aq</i>	<i>Bo</i>	Botany	
Suzanne Paras, <i>Aq</i>	Baunnie Sea, <i>OM</i>	Kim Thomson, <i>Ex</i>	<i>Cl</i>	Clerical	
Luba Parry, <i>AE</i>	Richard Searle, <i>OM</i>	Sarah P. Thorson, <i>Do</i>	<i>Cu</i>	Custodial	
Dave Parsons, <i>Aq</i>	Linda Seekamp, <i>En</i>	Karen Titel, <i>Do</i>	<i>Do</i>	Docent	
Susan Payette, <i>SE</i>	Joel Seewald, <i>DR</i>	John Tobin, <i>Do, Aq</i>	<i>DR</i>	Discovery Room	
Nancy Pease, <i>Do</i>	Lesley Segedy, <i>Do, Aq</i>	Bruce Toloski, <i>He</i>			
Ana Maria Lira Penny, <i>En</i>	Joan Semonsen, <i>Do</i>	Mary Tomasco, <i>DR</i>			
Roger Penny, <i>En</i>	Maha Shamiyeh, <i>Aq, Cl</i>	Dennis Tong, <i>IG</i>			
Jean Perez, <i>DR, Li-Sc</i>	Lori Shearn, <i>Do</i>	Jafar Toulouee, <i>Aq</i>			
Estella Perez-Gomez, <i>Cl</i>	Albert Shell, <i>Do</i>	Peter Towle, <i>Aq</i>			
Joanne Perry, <i>Do</i>	Marty Shell, <i>Li</i>	Kin Tsang, <i>Aq</i>			
Marianne Peterson, <i>Ad</i>	Roxane Shelly, <i>SE</i>	Charles Tsou, <i>Aq</i>			
Nancy Pickford, <i>Do</i>	Dan Sherman, <i>Aq, Cl</i>	Darcy Tucker, <i>Aq</i>			
Guy Pilara, <i>IS</i>	Patrick Sherry, <i>Aq</i>	Jennifer Tucker, <i>Aq, Cl</i>			
Peter Pomeroy, <i>Aq</i>	Diane Shonwald, <i>ID</i>	Pat Tucker, <i>Do</i>			
Carlos Portera, <i>Aq</i>	Kimberly Shuck, <i>Aq</i>	Joyce Turowski, <i>SE</i>			
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Judy Prokupek, <i>Do, Li-Sc, Aq</i>	Marjorie Silver, <i>Do</i>	John Van Staveren, <i>IG</i>			
Robert M Prokupek, <i>Li-Sc</i>	Ramona Silver, <i>DR</i>	Ned Vander Pol, <i>Aq</i>			
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Steven Pullman, <i>IG</i>	Robyn Simonsen, <i>Aq</i>	Joan Verdi, <i>Do</i>			
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Enrique Ramirez, <i>AE</i>	Gordon Small, <i>En</i>	Miguel Victorino, <i>Aq</i>			
Herman Real, <i>En</i>	Anita Smith, <i>DR</i>	Eleanor Visser, <i>Do</i>			
Anita Reichel, <i>ID</i>	Anthony Smith, <i>Aq</i>	Bud Wagner, <i>Ic</i>			
Cecil Reichert, <i>Li-Sc</i>	Chris Smith, <i>IG</i>	Katherine Wald, <i>Ad</i>			
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THE FELLOWS of the California Academy of Sciences are an important part of the institution—the governing body of eminent scientists and trustees whose predecessors founded the institution 133 years ago. These individuals represent the full range of disciplines within the natural sciences and are appointed in recognition of their contributions to the growth of scientific knowledge, particularly in the Pacific region. Nominated by their colleagues and appointed by the Board of Trustees at the recommendation of the Science Council, the Fellows remain members of the fellowship for life.

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EACH YEAR, one of more prominent Fellows is selected for special honors. At the annual Fellows' meeting in October 1987, the institution's highest honor, the Fellows' Medal, was presented to Dr. J. Desmond Clark, Professor of Anthropology, University of California, Berkeley, for his lifetime contributions to the field of archaeology and research in human origins.

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Bob Dempster, *Guard*  
Carl Drake, *Guard*  
Marty Smith, *Guard*  
Darnell Mabrey, *Guard*

#### PRINT SHOP

Ramiro Martinez, *Printer*  
Stella E. Tatro, *Binder*

#### ACADEMY STORE

Suzanne Price, *Manager*  
Linda Chalmers, *Assistant Manager*  
Bill Kwok, *Bookkeeper*  
David Schussolin, *Shipping/Receiving*  
Scott Abel, *Systems Administrator*  
Paul Delucchi, *Sales Supervisor*  
David Gabriel, *Lead Sales Clerk*  
Jan Swearingen, *Sales Clerk*  
Francisco Donoso, *Sales Clerk*  
Betty Lee, *Sales Clerk*  
Isabelita Vengco, *Sales Clerk*  
Robin Wilson, *Sales Clerk*  
Mark Zimmerman, *Sales Clerk*

#### PEPPERWOOD RANCH NATURAL PRESERVE

George E. Lindsay, *Director*  
Greg de Nevers, *Resident Biologist and Manager*  
Fred Funk, *Resident Supervisor*

#### DEVELOPMENT DIVISON

Diana Coleman, *Director of Development*

#### DEVELOPMENT

Diana Coleman, *Director of Development*  
Mary L. Casey, *Annual Fund Coordinator*  
Kathryn Hecht, *Development Officer*  
for Special Projects  
Laura Shain, *Research Coordinator*  
Mark Senjamin, *Systems Manager*  
Carmen Valentine, *Assistant*

#### SPECIAL EVENTS, PROGRAMS, AND TRAVEL

Sandra Lelich, *Coordinator of Special Programs*  
and Travel  
Deidre Kernan, *Coordinator of Special Events*  
Kim Dodd, *Special Events Assistant*  
Nancy Fuller, *Special Events Assistant*

#### MEMBERSHIP

Tina Ahn, *Membership Coordinator*  
Lisa Macias, *Assistant Membership Coordinator*  
Janet Farmer, *Membership Assistant, Pacific*  
Discovery Subscription Coordinator  
Rae Saxton, *Membership Assistant*  
Linda Astabie, *Membership Recruiter*  
Kent Barichievich, *Membership Recruiter*  
Lisa Ann Gold, *Membership Recruiter and*  
Office Assistant  
Eric Louie, *Membership Recruiter*  
Micah Nothenberg, *Membership Recruiter*  
Bernadette Sallaberry, *Membership Recruiter*  
Helen Wong, *Membership Recruiter and*  
Office Assistant  
Lucy Sallaberry, *Office Assistant*

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# FINANCIAL STATEMENTS

*Fiscal Year Ended June 30, 1987*  
(With Comparative Totals for 1986)

## BALANCE SHEET

	<i>Current Funds</i>		<i>Endowment Funds</i>			<i>Total All Funds</i>	
	<i>General Operating Fund</i>	<i>Restricted Funds</i>	<i>General Purpose Endowment Fund</i>	<i>Restricted Endowment Fund</i>	<i>Museum Modernization Fund</i>	<i>1987</i>	<i>1986</i>
<b>ASSETS</b>							
<b>Cash:</b>							
Commercial accounts .....	\$ 236,791	198,364	—	9,899	158,115	603,169	512,801
Savings accounts and money market funds .....	—	1,051,977	—	3,304	5,008,412	6,063,693	4,112,950
<b>Receivables:</b>							
Research grants .....	—	1,096,249	—	—	—	1,096,249	677,248
Accrued interest and dividends .....	—	—	109,607	49,048	—	158,655	186,283
Other .....	105,859	15,960	—	2,400	501	124,720	325,694
<b>Inventory</b> .....	233,068	—	—	—	—	233,068	—
<b>Prepaid expenses</b> .....	162,850	9,150	—	—	6,558	178,558	292,314
<b>Investments in marketable securities</b> .....	—	—	17,716,896	4,175,639	—	21,892,535	19,637,583
<b>Real property</b> .....	—	—	1,258,084	1,034,834	510,968	2,803,886	2,066,544
<b>Due from (to) other funds</b> .....	(59,736)	148,592	(141,787)	(19,677)	72,608	—	—
<b>Total assets</b> .....	<b>\$ 678,832</b>	<b>2,520,292</b>	<b>18,942,800</b>	<b>5,255,447</b>	<b>5,757,162</b>	<b>33,154,533</b>	<b>27,811,417</b>
<b>LIABILITIES AND FUND BALANCES</b>							
<b>Liabilities:</b>							
Accounts payable .....	377,286	53,536	11,979	13,404	136,839	593,044	777,244
Deferred grant income .....	—	946,712	—	—	—	946,712	560,047
Deferred restricted support .....	—	—	—	—	5,226,536	5,226,536	3,374,939
Other liabilities .....	301,546	2,408	—	—	1,358	305,312	80,624
Funds held in custody .....	—	170,018	—	363,361	—	533,379	—
	<b>678,832</b>	<b>1,172,674</b>	<b>11,979</b>	<b>376,765</b>	<b>5,364,733</b>	<b>7,604,983</b>	<b>4,792,854</b>
<b>Fund balances:</b>							
Current restricted:							
Research grants .....	—	84,618	—	—	—	84,618	121,759
Special projects .....	—	1,263,000	—	—	—	1,263,000	1,342,444
Museum modernization .....	—	—	—	—	392,429	392,429	165,866
Endowment funds, under board discretion .....	—	—	18,930,821	4,878,682	—	23,809,503	21,388,494
	<b>—</b>	<b>1,347,618</b>	<b>18,930,821</b>	<b>4,878,682</b>	<b>392,429</b>	<b>25,549,550</b>	<b>23,018,563</b>
Commitments and contingencies							
<b>Total liabilities and fund balances</b> .....	<b>\$ 678,832</b>	<b>2,520,292</b>	<b>18,942,800</b>	<b>5,255,447</b>	<b>5,757,162</b>	<b>33,154,533</b>	<b>27,811,417</b>

The information on these pages has been summarized from audited financial statements, copies of which are available upon request from the office of the executive director.

\*In 1985-1986 the unrestricted endowment allocation was reduced by \$569,817 due to the operating surplus that year. In 1986-1987, the Board of Trustees approved an additional endowment allocation to offset the operating deficit of \$404,416.

# STATEMENT OF CURRENT UNRESTRICTED GENERAL OPERATING FUND REVENUES, EXPENSES, TRANSFERS, AND FUND BALANCE (DEFICIT)

	1987	1986
<b>Operating revenue:</b>		
Admissions .....	\$2,200,396	\$2,585,847
Contributions .....	675,020	324,193
Memberships .....	586,488	596,877
Concession and sales .....	519,415	533,425
Tuition and program fees .....	180,181	192,191
Government grant income .....	138,462	170,003
City and County of San Francisco .....	1,559,417	1,571,094
<b>Total operating revenue</b> .....	<b>5,859,379</b>	<b>5,973,630</b>
<b>Non-operating revenue:</b>		
Unrestricted endowment allocation* .....	2,154,416	1,095,183
Restricted endowment earnings .....	181,000	162,500
Commercial building rent, net .....	562,031	686,564
<b>Total non-operating revenue</b> .....	<b>2,897,447</b>	<b>1,944,247</b>
<b>Total revenues and transfers</b> .....	<b>8,756,826</b>	<b>7,917,877</b>
<b>Expenses:</b>		
Research .....	2,193,535	1,978,185
Public programs .....	2,503,559	2,320,019
Aquarium .....	1,606,556	1,581,390
Development and membership .....	1,003,736	825,047
Management and general .....	1,235,525	945,543
<b>Total operating expense</b> .....	<b>8,542,911</b>	<b>7,650,184</b>
Capital expenditures .....	213,915	210,571
<b>Total expenses</b> .....	<b>8,756,826</b>	<b>7,860,755</b>
<b>Excess of revenues and transfers over expenses</b> .....	<b>-</b>	<b>57,122</b>
<b>Fund balance (deficit), beginning of year</b> .....	<b>-</b>	<b>(57,122)</b>
<b>Fund balance, end of year</b> .....	<b>\$ -</b>	<b>-</b>

## STATEMENT OF CHANGES IN FUND BALANCES

	<i>Current Funds</i>		<i>Endowment Funds</i>			<i>Total All Funds</i>	
	<i>General Operating Fund</i>	<i>Restricted Funds</i>	<i>General Purpose Endowment Fund</i>	<i>Restricted Endowment Fund</i>	<i>Museum Modernization Fund</i>	1987	1986
<b>Balances at beginning of year</b> .....	\$ -	1,464,203	16,898,286	4,490,208	165,866	23,018,563	20,546,771
Adjustment for funds held in custody .....	-	(207,776)	-	(328,740)	-	(536,516)	-
Adjusted balance at beginning of year .....	-	1,256,427	16,898,286	4,161,468	165,866	22,482,047	20,546,771
<b>Additions:</b>							
Admissions .....	2,200,396	-	-	-	-	2,200,396	2,585,847
Contributions and memberships .....	1,261,508	647,744	517,439	684,497	3,933,026	7,044,214	3,057,461
Deferred for capital campaign .....	-	-	-	-	(1,851,597)	(1,851,597)	(2,219,145)
Tuition, fees, concessions, sales .....	699,596	213,509	2,500	4,620	-	920,225	1,226,225
Government and foundation grants .....	138,462	679,825	-	-	-	818,287	2,504,452
City and County of San Francisco .....	1,559,417	-	-	-	-	1,559,417	1,571,094
Endowment earnings .....	-	25,465	1,030,877	233,630	226,563	1,516,535	1,419,391
Net gain on sale of securities .....	-	-	2,976,163	59,684	-	3,035,847	2,171,357
Commercial building .....	562,031	-	-	-	-	562,031	686,564
Other income .....	-	57,655	-	1,225	-	58,880	246,362
Fund allocation and transfers to (from) .....	2,335,416	(65,432)	(2,154,416)	(138,386)	22,818	-	-
<b>Total additions</b> .....	<b>\$8,756,826</b>	<b>1,588,766</b>	<b>2,372,563</b>	<b>845,270</b>	<b>2,330,810</b>	<b>15,864,235</b>	<b>13,249,608</b>
<b>Deductions:</b>							
Salary expense .....	4,667,255	434,859	-	22,394	484,542	5,609,050	4,654,015
Fringe benefits and payroll taxes .....	769,700	73,719	-	3,551	80,932	927,902	835,167
Departmental operating expense .....	1,506,419	407,648	-	-	386,443	2,300,510	2,696,744
Building operations and allocated expenses .....	1,599,537	213,989	340,028	80,208	543,743	2,777,505	1,960,286
Capital and permanent exhibit construction .....	213,915	337,360	-	21,903	608,587	1,181,765	631,604
<b>Total deductions</b> .....	<b>\$8,756,826</b>	<b>1,467,575</b>	<b>340,028</b>	<b>128,056</b>	<b>2,104,247</b>	<b>12,796,732</b>	<b>10,777,816</b>
<b>Balances at end of year</b> .....	<b>\$ -</b>	<b>1,347,618</b>	<b>18,930,821</b>	<b>4,878,682</b>	<b>392,429</b>	<b>25,549,550</b>	<b>23,018,563</b>

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**FRONT COVER:** *A juvenile Quetzalcoatlus northropi glides over Cowell Hall en route to the Life Through Time exhibit opening in Peterson-McBean Hall in fall 1989. Bones of this pterosaur, a flying reptile that lived 65 million years ago, were found in Texas. The animal was named after the Aztec god with the form of a feathered serpent. Evidence of the furry body covering is preserved in pterosaur specimens from Russia and Germany.*

*Illustrations by Chris Krueger*